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Module 13

Stormwater Quantity Requirements and Minimum Standard 19



The Evolution of MS-19

Regulatory Drivers:

- Erosion & Sediment Control (ESC)
 Regulations
- Stormwater Management (SWM)
 Regulations (Part IIC)
- SWM Law
- SWM Regulations (Part IIB)



MS-19

"Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion, and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff . . . "



SWM Regulations (Part IIB): Quantity Control

Meet the new boss . . . Same as the old boss?

9VAC25-870-66. Water Quantity.

Channel Protection.

Channel protection and flood protection minimum standards are established pursuant to the requirements of subdivision 7 of § 62.1-44.15:28 of the Code of Virginia.



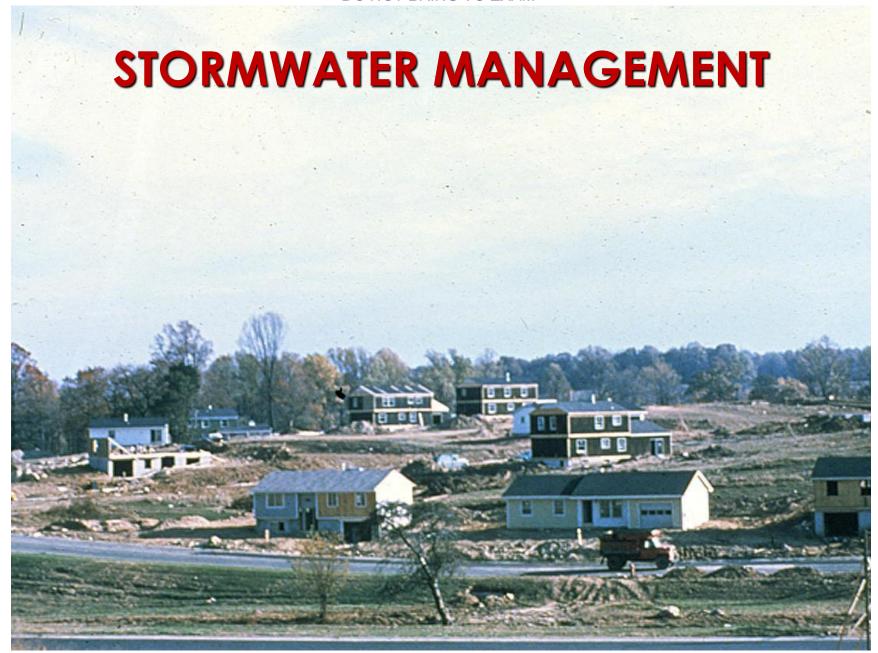
Primary Regulatory Driver: SWM Law

§ 62.1-44.15:28 A.10

Require that VSMPs:

- Replicate, as nearly as practicable, existing predevelopment runoff characteristics and site hydrology, or
- Improve upon contributing share of predevelopment stream channel erosion or localized flooding





DO NOT BRING TO EXAM



DO NOT BRING TO EXAM

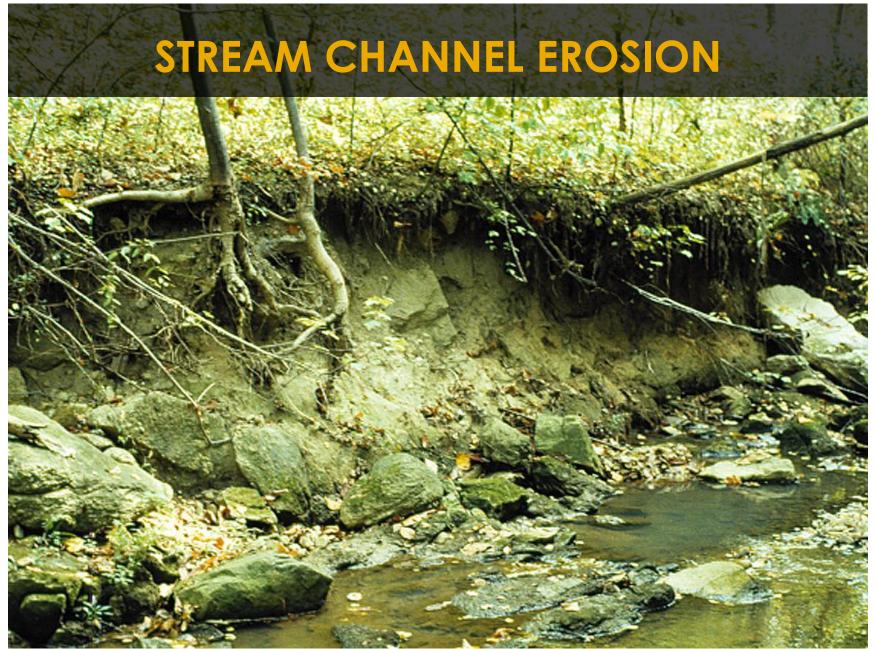


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Natural Streams are in equilibrium with their watershed

- Greater imperviousness = greater runoff
- Issue: How will the change in the drainage area affect a given channel?



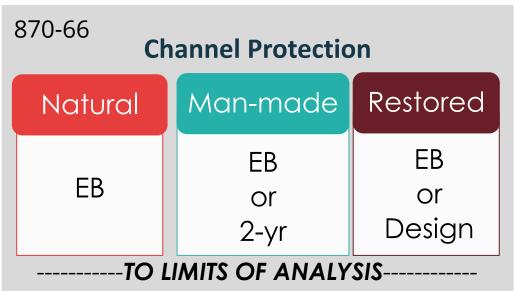


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• Erosion: 2-yr Capacity: 2 yr • Erosion: 2-yr Capacity: 10-yr Exempt



No Flooding:

Demonstrate:

- No 10-yr flooding pre
- No 10-yr flooding post (detention/improvements)

---TO LIMITS OF ANALYSIS---

Local Flooding:

<u>Must</u> eliminate flooding by:

- on-site detention
- system improvements
- Combination

---TO LIMITS OF ANALYSIS---

OR

 Detention of 10-year peak flow to less than existing

--NO LIMITS OF ANALYSIS (POST)--

MS-19 still applies, in parts:

9VAC25-840-40.19.d.

 Applicant must provide evidence of permission to make improvements.



MS-19 still applies, in parts:

9VAC25-840-40.19.e.

 All hydrologic analyses must be based on existing watershed characteristics and ultimate development condition.



MS-19 still applies, in parts: 9VAC25-840-40.19.f.

- Maintenance plan for stormwater detention options required
 - Must be approved by VESCP authority
 - Include maintenance requirements of facility and person responsible



MS-19 still applies, in parts: 9VAC25-840-40.19.g.

 energy dissipaters shall be placed at the outfall of all detention facilities as necessary



MS-19 still applies, in parts:

9VAC25-840-40.19.h.

 All on-site channels must be verified to be adequate.



MS-19 still applies, in parts: 9VAC25-840-40.19.j.

- Developments consisting of individual lots or parcels must be considered as a whole
 - Residential, commercial, or industrial
 - Hydrologic parameters in engineering calculations must reflect ultimate development condition



MS-19 still applies, in parts:

9VAC25-840-40.19.k.

 Measures used to protect properties and waterways must be employed to minimize impacts on physical, chemical, and biological integrity of rivers, streams and other waters of the state.





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Adequate channel?

- Velocity
- Volume
- Duration (Time of Concentration)
- Frequency

Note: need to check onsite channels as well



Urban Stream Problems

- Impervious surfaces result in increased volume, velocity, frequency, and peak rates of flow
- Detention practices address:
 - velocity and peak flow rates
 - but not volume, frequency, and duration





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- Limit and disconnect impervious surfaces
- Encourage infiltration where appropriate



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9VAC25-840-40.19.c. supplanted by 9VAC25-870-66

Channel Protection (Man-made channels) Flood Protection (all)

- Compliance by:
 - Detention of stormwater or
 - Downstream improvements may be incorporated in approved LDA,
 - at discretion of plan approving authority.





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SWM Regulations 9VAC25-870-97:

"Downstream properties shall be protected ..."

- Compliance with MS-19
- 1-year extended detention
- Localities may adopt more stringent criteria



9VAC25-840-40.19. m. & n.

After 7/1/2014:

9VAC25-870-66

(unless grandfathered)

9VAC25-870-66 satisfies MS19

